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IS 7276 (1989): Non-expendable general purpose, flat pallets for through transit of goods [TED 12: Freight Containers and Pallets]



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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

**NON-EXPENDABLE GENERAL PURPOSE
FLAT PALLETS FOR THROUGH TRANSIT
OF GOODS — SPECIFICATION**

(Second Revision)

भारतीय मानक

**वस्तुओं के परिवहन के लिए व्यय न होने वाले सामान्य प्रयोजन के
फ्लैट पैलेट -- विशिष्ट**

(दूसरा पुनरीक्षण)

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**BUREAU OF INDIAN STANDARDS
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FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards on 25 October 1989, after the draft finalized by the Pallet Sectional Committee had been approved by the Heavy Mechanical Engineering Division Council.

This standard was first published as IS 7276 (Part 1) : 1974 and covered non-expendable pallets. First revision of this standard was made in 1979 when the Sectional Committee decided to prepare separate standards for expendable and non-expendable pallets without making reference to material to enable the manufacturers and users to select appropriate material keeping specific application in view. The second revision of this standard has been done to align it with ISO/DIS 6780/1 and make it more comprehensive. In this revision the nominal overall plan dimensions of pallets have been modified and the manufacturing tolerance on the metric overall dimensions has been changed. Also, there are some changes in the dimensions of entry.

This standard is based in principle on the unit load sizes as defined in IS 8470 : 1977 'Dimensions of rigid rectangular transport packages'. This standard specifies the pallet sizes which conform to those unit load sizes. These pallet sizes are unlikely to cover all requirements because of substantial differences in sizes, shapes and densities of product, variety in handling devices, regional practice, etc.

Annex A gives illustrations of different pallet types showing the vertical dimensions specified in the standard. This Annex A is included for additional guidance and does not form an integral part of this standard.

In the preparation of this standard, assistance has been derived from ISO/DIS 6780/1 'General purpose flat pallets for through transit of goods : Part 1 Principal dimensions and tolerances', issued by the International Organization for Standardization (ISO).

AMENDMENT NO. 1 OCTOBER 2006
TO
IS 7276 : 1989 NON-EXPENDABLE GENERAL
PURPOSE FLAT PALLETS FOR
THROUGH TRANSIT OF GOODS —
SPECIFICATION

(Second Revision)

(Page 1, clause 2) — Insert the following at the end:

‘IS 13546 : 1992 General purpose flat pallets for through transit of goods —
Performance requirements’

(Page 1, footnote marked †) — Substitute ‘ ± 5 ’ for ‘ ± 3 ’.

(Page 2, clause 9.1) — Insert the following matter at the end:

‘The sample shall conform to the requirements as specified in IS 13546:1992.

10 MARKING

10.1 The following information shall be legibly marked either by paint or during moulding on external surface of each pallet:

- b) Manufacturer’s name or trade-mark,
- b) Size of the pallet,
- c) Type of entry,
- d) Load capacity, and
- e) Lot No.

(TED 12)

Indian Standard

NON-EXPENDABLE GENERAL PURPOSE FLAT PALLETS FOR THROUGH TRANSIT OF GOODS — SPECIFICATION

(Second Revision)

1 SCOPE

1.1 This standard specifies overall dimensions (with tolerances) for non-expendable pallets (single deck and double deck non-reversible pallets) for through transit of goods, together with dimensions related to their handling by pallet trucks, fork lift trucks and other appropriate handling equipment.

2 REFERENCES

IS No.	Title
3971 : 1976	Glossary of terms for pallets
6219 : 1977	Test code for non-expendable flat pallets (first revision)
8470 : 1977	Dimensions of rigid, rectangular transport packages

3 GENERAL

3.1 Pallets with sizes deviating from this standard, but within the dimensional deviations of the unit loads defined in (that is ± 0 mm) shall not be rejected on the basis of this standard (for example: 1 100 mm \times 1 100 mm pallets).

4 TERMINOLOGY

4.1 For the purpose of this standard, the definitions as given in IS 3971 : 1976 shall apply.

5 DIMENSIONS

5.1 Plan Dimensions

5.1.1 Nominal Overall Dimensions

The nominal overall plan dimensions of pallets shall be:

- a) 1 200 mm \times 1 000 mm Pallets size related to the preferred modular unit load size of 1 200 mm \times 1 000 mm.
- b) 1 200 mm \times 800 mm Pallet size related to the recognized unit load size of 1 200 mm \times 800 mm.

c) 1 140 mm \times 1 140 mm Pallet size related to the recognized square unit load size of 1 140 mm \times 1 140 mm, which is derived from the internal width of the ISO series 1 general purpose freight container*.

d) 1 219 mm \times 1 016 mm Pallet size acceptable for a period of transition while metrication goes into effect in those parts of the world where this size is used.

5.1.2 The tolerances on the nominal overall plan dimensions given in 5.1.1 shall be $\begin{matrix} +0 \\ -6 \end{matrix}$ mm†.

5.2 Vertical Dimensions for Lifting Devices

5.2.1 The vertical dimensions of entries for the forks of fork lift trucks and the fingers of pallet trucks shall be not less than 98 mm, with the exception of pallets having free entries where the dimension shall be not less than 95 mm (see Fig. 1, Annex A)

5.2.2 The vertical dimension of notches for the forks of fork lift trucks shall be not less than 45 mm (see Fig. 2, Annex A)

5.2.3 The vertical dimension from the underside of the lowest of the top deck to the ground shall not exceed 127 mm for partial four way pallets and double deck pallets having free entries [see Fig. 3(a), Annex A]

5.2.4 The vertical dimension for full perimeter base pallets shall not exceed 156 mm [see Fig. 3(b), Annex A]

NOTE — With hygroscopic materials, for example, timber, the dimensions stated in 5.2.1 to 5.2.4 relate to an average moisture content of 20 percent.

*Future developments in freight container technology and construction may permit increase in these plan dimensions up to the limit of the modular dimensions of 1 200 mm.

†To meet the specified tolerances, certain materials require a positive tolerance at time of manufacture because of shrinkage. Such pallets may have a manufacturing tolerance of ± 3 mm.

5.3 Horizontal Dimensions Relating to the Entry of Lifting Devices

5.3.1 The arrangements and horizontal dimensions relating to the entry of the forks of fork lift trucks and the fingers of pallet trucks shall be as specified in Table 1 for two-way and four-way pallets and in Table 2 for partial four-way pallets.

5.3.2 The arrangements and the dimensions of the openings which are provided in the bottom deck of pallets to allow the use of pallet trucks shall be as specified in Table 1 for two-way and four-way pallets and in Table 2 for partial four-way pallets.

5.4 Dimensions of Bottom Deck Members

To facilitate entry of the finger-wheels of a pallet truck, the thickness of the members of the bottom deck of a pallet shall not exceed 28 mm. When the thickness exceeds 10 mm, the leading and trailing edges of the members of the bottom deck shall be chamfered on each side of the top face as follows:

- a) The angle between the chamfered face and the horizontal shall be $40 \pm 5^\circ$; and
- b) The height of the vertical face of the member shall not exceed:
 - i) For wood: 15 mm
 - ii) For other materials: 10 mm

5.5 Dimensions Specific to Wing Pallets

5.5.1 The width of the wing shall not be less than 65 mm.

5.6 Bearing Surface of Bottom Deck — Double Deck Pallets

5.6.1 The bearing surface of the element or elements of the bottom deck shall be equal to or greater than 35 percent of the nominal overall plan dimensions.

NOTE — 35 percent shall be regraded as the absolute minimum and shall be increased wherever practicable.

5.7 Squareness

5.7.1 At the time of manufacture the difference in length of the two diagonals shall not exceed 13 mm.

6 MATERIAL

6.1 Material for the pallets shall be as agreed to between the purchaser and the manufacturer.

7 CONSTRUCTION REQUIREMENTS

7.1 General

All pallets shall be well constructed throughout with top and bottom faces flat and sides at right angles with each other.

7.2 Fastening

7.2.1 The components shall be secured by welding or mechanical fasteners, such as nails, bolts, screws or rivets. Mechanical fasteners shall not project above the deck surface, but reasonable welding fillets are permitted.

7.2.2 The sizes and types of the welding/mechanical fasteners shall be selected to suit the thickness of the material used for the construction of the pallet.

7.3 Finish

Before applying the finish required by the customer the pallet shall be free from damp, grease, rust slag and excessive weld splatter. If a metal pallet is to be galvanized, the surface shall not be excessively rough after galvanizing.

8 RATING

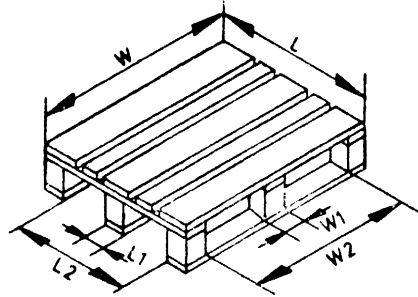
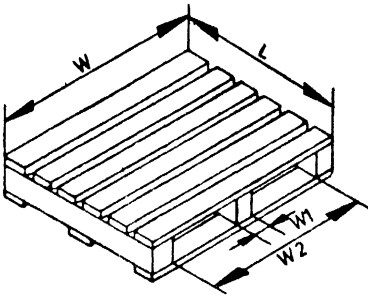
8.1 Pallets shall be capable throughout their working life of supporting a uniformly distributed load of 1 000 kg for pallets up to the size of $1\,000 \times 1\,200$ mm.

9 TESTS

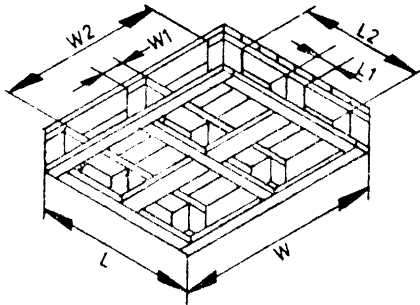
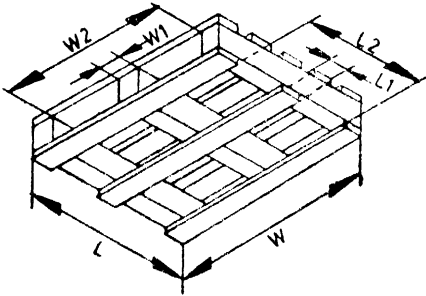
9.1 The pallets shall be tested in accordance with tests specified in IS 6219 : 1977.

Table 1 Arrangements and Horizontal Dimensions Relating to the Entry of Fork Lift Trucks and Pallet Trucks — Two-Way and Four-Way Pallets

(Clauses 5.3.1 and 5.3.2)



a) ENTRIES

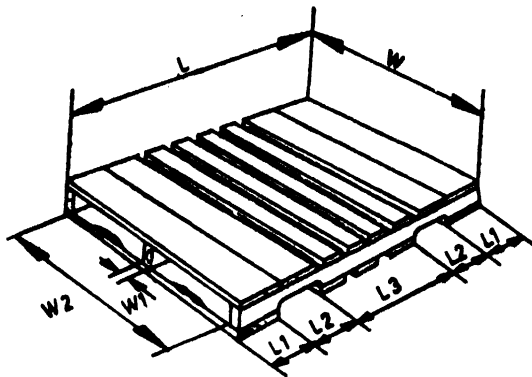


b) OPENINGS

Nominal Dimensions of Pallet	Dimensions of Openings and Entries	
Length (L) or Width (W) mm	(L_1) Max or (W_1) Max mm	(L_2) Min or (W_2) Min mm
800	150	590
1 000	150	720
1 140	150	760
1 200	150	770

Table 2 Arrangements and Horizontal Dimensions Relating to the Entry of Fork Lift Trucks and Pallet Trucks — Partial Four-Way Pallets

(Clauses 5.3.1 and 5.3.2)



Nominal Dimensions of Pallet		Dimensions of Openings and Entries									
Length (L) mm	Width (W) mm	L ₁ †		L ₂ †		L ₃		W ₁		W ₂	
		Max mm	Min mm	Max mm	Min mm	Max mm	Min mm	Max mm	Min mm	Max mm	Min mm
1 000	1 200	155	90	255	200*	420	100	150	38	1 124	900
1 200	1 000	155	90	255	200*	620	380	150	38	924	700
800	1 200	155	90	210	200*	220	100	150	38	1 124	900
1 200	800	155	90	255	200*	620	380	150	38	724	700
1 219	1 016	155	90	255	200*	639	399	150	38	940	716
1 016	1 219	155	90	255	200*	436	196	150	38	1 143	919
1 140	1 140	155	90	255	200*	560	320	150	38	1 064	840

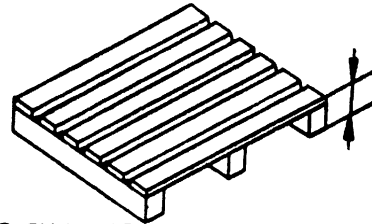
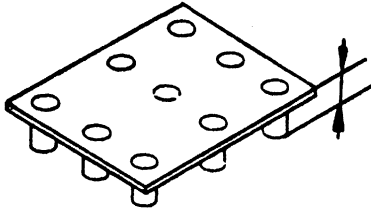
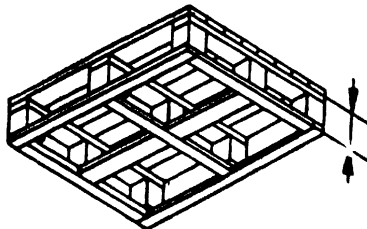
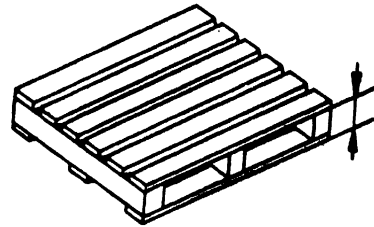
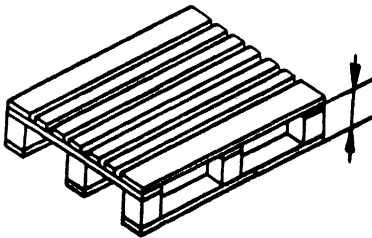
NOTES

1 Pallets having the dimensions marked* in Table 2 cannot be handled with pallet trucks having tandem trail wheels. Dimension L₃ shall, therefore, be kept at the maximum whenever possible to enable such pallet trucks to be used.

2 Partial four-way pallets with a length of 800 mm cannot be handled by pallet truck having tandem trail wheels, even with L₃ at maximum.

† Pallet strength and versatility are optimized, if L₁ and L₂ are constructed to the maximum tolerances.

ANNEX A

(*Clauses 5.2.1 to 5.2.4*)**A-1 VERTICAL DIMENSIONS OF ENTRIES FOR LIFTING DEVICES** — Measurement of specified dimensions with typical pallet designs.**a) FREE ENTRY NOT LESS THAN 95 mm****b) ENTRY NOT LESS THAN 98 mm****FIG. 1** TYPICAL TWO-WAY AND FOUR-WAY PALLET DESIGNS ILLUSTRATING THE VERTICAL DIMENSIONS SPECIFIED IN 5.2.1

ANNEX A (*Contd*)

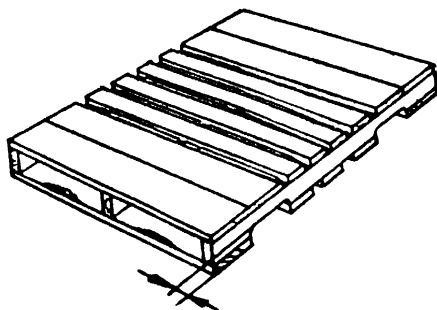
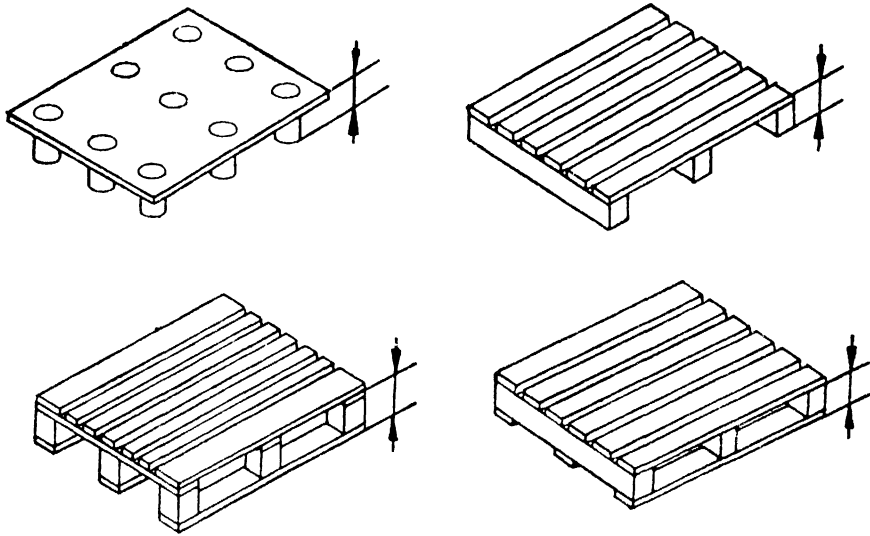
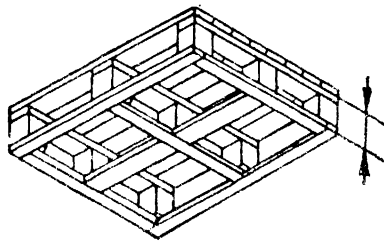


FIG. 2 PARTIAL FOUR-WAY PALLET ILLUSTRATING THE VERTICAL DIMENSION
SPECIFIED IN 5.2.2 (ENTRY NOT LESS THAN 45 mm)

ANNEX A (Contd)



a) ENTRY NOT MORE THAN 127 mm



b) ENTRY NOT MORE THAN 156 mm

FIG. 3 TYPICAL TWO-WAY AND FOUR-WAY PALLET DESIGNS ILLUSTRATING THE VERTICAL DIMENSIONS SPECIFIED IN 5.2.3 AND 5.2.4

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